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AUTHOR Dreyer, Albert S.
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INSTITUTION Connecticut Univ., Storrs. Dept. of Child Development and Family Relations.
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ABSTRACT

This study was designed to examine the family interaction differentiating the families of field dependent and field independent children. A total of 300 white, middle class, kindergarten children were tested with the Portable Rod and Frame Test and the Children's Embedded Figures Test and were classified as field dependent or field independent based on their scores on these tests. From this sample, 18 extremely field dependent children (9 boys and 9 girls) and 20 extremely field independent children (10 boys and 10 girls) were selected for this study. Observations of these 38 children interacting with their parents were made in the home setting around dinnertime and in a series of 6 laboratory tasks designed to elicit power and autonomy behaviors. The results indicated that families of field independent children were characterized by less structured family power relations which varied in expressions of autonomy and power from situation to situation. Families of field dependent children seemed to have a more sharply defined set of family roles and more stability in the power structure. Further, it was found that for field independent families, the same sex parent was the dominant figure, while for field dependent families, the opposite sex parent was dominant. (JMB)

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The University of Connecticut

Department of Child Development and Family Relations

FAMILY INTERACTION AND COGNITIVE STYLE: SITUATION
AND CROSS-SEX EFFECTS

Albert S. Dreyer

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There has been a marked increase in the last few years in the number of research reports based on direct observation of parent-child interaction. Characteristically, these studies have been done either in home or in laboratory settings. Characteristically these parent-child observations are of mother-child interactions. It seems to me that we need to study the family as an interacting system in a variety of settings if we are to broaden our generalizations about parental role and, in particular, about father role.

This is such a cliché by now yet we child developmentalists still do not tend to study the family as a unit. This view of parent-child relations as essentially dyadic is certainly characteristic of the area of my own research interests - namely the development of Field Dependent-Field Independent (FD-FI) cognitive style. The terminology has changed over the years of work in the area but for ease of understanding here I will keep the more familiar terms. FI persons, as you are undoubtedly aware, appear to be more capable of articulating an impersonal stimulus independently of its embedding context, whereas the perception and other behavior of FD persons seems to be strongly influenced by the circumstances.

The research attempting to discover how these individual differences arise has suggested that early experiences encouraging autonomous and active interchange with the world, i.e. experiences providing the child with opportunities to choose among behavior alternatives are associated with the development of a more FI style of functioning.

The studies done in this area have, it should be noted, either been retrospective, and/or have used questionnaires and interview and/or have omitted the role of father. The father effects studied have centered on such issues as the relation of father presence or absence to FD/FI in sons or the perception of father warmth

by son's differing in cognitive style. Biller (1971; 1974) summarizes this research as indicating that FI seemingly is facilitated by frequent interaction with a nurturant, masculine father. He also goes on to say that the sheer availability of father is not sufficient to promote FI cognitive style. What goes on in the interaction is important, he says. I could not agree with him more but would also indicate the need to look at father's impact on the daughter's cognitive functioning. I would also like to stress that the nature of the family in interaction, even when father is present, has not been directly observed either with sons or with daughters in examining father's effects on cognitive style.

This was the original purpose of the current study - namely, to examine the family interaction differentiating the families of FD/FI children. I will report on indicators of power and autonomy observed in two settings - home and laboratory - in a sample of FD/FI CA 5 boys and girls and their mothers and fathers. I have two overlapping objectives here - one is substantive and one is methodological. I would like to first summarize the findings of this research to date paying particular attention to father effects in these families. I would like to raise certain conceptual issues that are inherent in the studies of families.

Methods

Subjects. The sample consisted of 38 white, middle-class kindergarten children, and their mothers and fathers. The 19 boys and 19 girls represented extreme cognitive style groups selected from a sample of 300. Half of the boys and half of the girls were highly FD; the other half were highly FI. All subjects were living in intact families with their natural parents.

Child Testing. The Portable Rod and Frame Test (Oltman, 1968), and the Children's Embedded Figures Test (Witkin, Oltman, Raskin, and Karp, 1973) were adapted

and pretested for use with kindergarten age children. Test-retest data found both of these measures to be stable and also to correlate highly (Dreyer, Dreyer, and Nebelkopf, 1971; Dreyer, Nebelkopf, and Dreyer, 1969). These two instruments were used as the selection criterion for generating our extreme groups. The WISC was used to control for intelligence. To be included in our extreme group sample, the child had to be in the upper or lower quartile of both the Portable Rod and Frame Test and Children's Embedded Figure Test score and have a WISC Total IQ within 1 S.D. around 100. We also wanted to balance the study sample by sex because of the possibility of differential treatment of the sexes in the two groups of families. The sample selection procedure gave us 20 FI independent children - 10 boys and 10 girls, and 18 FD children - 9 boys and 9 girls and their families. The mean IQ for the field independent group = 104.0; the mean IQ for the field dependent children = 102.7 (t test not significant) and their median age at the time of testing was 5 years, 6 months.

Family Interaction. Observations of these 38 families were made in two settings, (1) in the natural setting of their home environment around dinnertime and (2) a set of 6 laboratory tasks designed to elicit autonomy and power behaviors. We chose a home setting to represent a familiar, structured, and primarily social situation; the laboratory setting was chosen to represent an unstructured, unfamiliar, and primarily task-related situation.

The family's dinner observation began just before the evening meal, and it continued until just after the meal. The family's laboratory observation was held another evening in the project's trailer laboratory. The observers took non-participant roles in audiotaping these interactions. A two channel tape recorder obtained the family's verbatim conversation on one track and the observer's dictated

comments on the other. This was done using a Stenomask Dictation Silencer (Schoggen, 1964) which is a specially designed microphone insulating the observer's voice and prevents it from being heard in the room. The audiotapes were then transcribed with the verbatim family conversation on one side of a typed page and the observer's comments and descriptions of nonverbal behavior, for example, on the other.

The unit of analysis being used is a unit of social interaction. Any communication, verbal or nonverbal, which is received or acknowledged is called a Social Interaction Unit (SIU). It is a received communication between two or more individuals. There must be at least an initiator and a responder.

The category system being used to analyze these units has two facets. One facet involves Content or substantive variables such as Influence behaviors which include Commands (No Choice behavior) vs. Requests or Suggestions (Choice giving behavior). Other substantive behavior being coded are such things as Approval behavior. The other facet of the category system involves structural or Process variables such as Initiations and Terminations of SIU, Interruption behavior and other indicators of control behavior. Since the Content variables are currently being coded, the data for the Process variables will be reported.

Let me briefly define the various indicators of autonomy and power. Each of these was calculated for the mother, father, and child in the family.

- (a) Participation Index = $\frac{\text{Family member's Total Words}}{\text{Total Family words}}$
- (b) Initiation Index = $\frac{\text{Family member's Total SIU Initiations}}{\text{Total Family SIU Initiations}}$
- (c) Termination Index = $\frac{\text{Family member's Total SIU Terminations}}{\text{Total Family SIU Terminations}}$
- (d) Successful Interruption Index = $\frac{\text{Family member's Successful Interruptions}}{\text{Successful + Unsuccessful Interruptions of Family Member}}$

- (e) Interruption Contribution = Family member's Successful Interruptions/Total Family Successful Interruptions
Index

These indices, or variations of them, are widely used measures of autonomy and power in the family interaction literature (Farina, 1960; Jacob, 1975; Mishler and Waxler, 1968; Riskin and Faunce, 1973; Safilios-Rothschild, 1970).

Results

My major interests here center on family role effects within each of the four family subgroups, i.e. those where the child was a FI boy, FI girl, FD boy, FD girl. Because of the way the family is viewed as a system and because many of the indices themselves total 100% for any given family, a special ANOVA design was used in which each family subgroup variance is partitioned into components such that mother, father, and children are contrasted separately using a common error term.

I also was concerned with the problem of comparing home and laboratory scores. Since the two situations were originally chosen as qualitatively different, there is little support for a repeated-measures analysis of the data, (McCall and Applebaum, 1973), which would consider home and laboratory scores as a within-subjects factor. Instead of conceiving the problem as one where family members were administered two trials on the same measure, the two situations may differentially influence the relative number of contributions of each family member. The baseline is still the performance of the family measured in two observational settings. Instead of focusing on individual changes from the home to laboratory, I compared the patterning of behavior relative to one another in the family subgroups as they move from home to laboratory. To aid this type of comparison, a multivariate ANOVA model was superimposed on the special ANOVA design outlined above. All measures were analyzed

simultaneously to obtain a general indication of the amount of family role differentiation characteristic of a subgroup across indices and situations.

Let me present an overall summary of the findings to date. Then I will present some details to show the differences among the four subgroups of families - highlighting father effects in the particular family context.

The first conclusion reached from the behavior of these families has to do with the stability of the behavior patterns relative to one another across the home and laboratory observations. The FD families show the greater stability of behavior on these measures. The families of FI boys and girls show more changes in behavior between home and laboratory and also more differences among the family members. There are marked contrasts, furthermore, between the families of FI girls and FI boys.

The second conclusion reached is that the saliency of the same sex or opposite sex parent is different for FI and FD families. For FI families the same sex parent is the more salient or more dominant figure, i.e. fathers are more salient for FI-boys and mothers are more salient for FI girls. For FD families the pattern, although not as strong, is in the direction of the opposite sex parent being the more salient or dominant figure. So stability and saliency are two aspects of family interaction that seem to differentiate FD from FI families.

FD families - Stability

What were the data like that led to these conclusions? The families of FD boys and girls are such that the parents strongly dominate and these patterns of behavior do not change dramatically from home to laboratory. Home for all the families is in general the mothers domain but for the FD families, the mother and father tend to be closer to each in their behavior in the measures of power. They talk more than the child; they initiate more social behavior than their sons and daughters.

They are more like one another and very different from the children in their power behavior.

When all the families were observed in the laboratory setting, we find the fathers in general shifting more in the indices of power. This does not occur for all fathers across the board and it does not mean also that all mothers equally decrease in their power behavior in the laboratory compared to the home. With respect to the FD families, for example, the results indicated that the pattern and strength of family role effects remained much the same as in the home. In the laboratory, the mothers and fathers of FD girls participate equally as well as equally initiating and terminating more SIU.

It also should be noted that the mean level of interruptive behavior for the FD boys and girls remain the same from home to laboratory. As they move, in other words, from a familiar social situation to an unfamiliar situation, structured in terms of tasks to which the family must adapt, their behavior with respect to controlling the attention of their parents is not altered.

The FD families, then, manifest a more structured role relationship which remains relatively stable from one observational setting to another.

FI families - Stability

The FI families, in contrast, show more change in power behavior from home to laboratory sessions, and more dramatic differences in the pattern of interaction within the families. The families of FI boys and FI girls are very different in their pattern of interaction. The most extreme family role differences found are within the families of FI girls at home with the families of the FI boys showing the least differentiation at home. When the families of FI girls move to the laboratory situation, these family role differences decrease.

Specifically, at home the FI boys participate as much as their fathers and mothers, they initiate as many SIU; they talk more at home relative to their fathers and mothers; they contribute as much to the family total of successful interruptions as their fathers and mothers. These data all indicate that the FI boys have as much power as their mothers and fathers at home, to the degree that these measures are indicators of power.

The FI girls, on the other hand, initiate and terminate least at home; their participation scores are the lowest of the four children groups and it is their mothers who talk the most at home. In striking contrast to the FI boys, then, these FI girls show the least autonomy and power on these measures. And for the most part it is their mothers who "rule the roost" again to the degree that these measures are indicators of power.

The picture changes markedly when these FI families move to the laboratory situation with its task demands. The FI boys, for example, who participate at remarkably high levels at home, showed the biggest decrease in proportion of words spoken in the laboratory while their fathers showed the largest increase between home and laboratory. The fathers of the FI boys initiate more and terminate more SIU in the laboratory than they do in the home. So in the families of the FI boys, it is the father relative to the mothers and sons who are manifesting more power in these measures in the laboratory. Parenthetically these FI boys were more successful at interrupting in the laboratory. They had the lowest interruption scores at home and the highest in the laboratory of the four groups of children.

The data for the families of FI girls indicate that these girls in particular change a great deal from home to laboratory and alter the pattern of interaction in their families in the laboratory setting. The FI girls participate in the

laboratory more than in the home; they initiate and terminate least at home and increase most from home to laboratory; they are more successful interruptors in the laboratory than in the home; they showed a marked increase in SIU initiations and terminations in the laboratory.

Changes in the scores of their parents also contributed to the notion of shifting family role differentials as well. The mothers of FI girls are still talking a great deal in the laboratory but the fathers significantly increase their participation in the laboratory and the mothers significantly decrease their participation. The mothers of the FI girls also initiate and terminate relatively fewer SIU in the laboratory than in the home.

These shifts in behavior are what led to the conclusion that the families of FI children show a greater variability in family role patterns as a function of situation.

I was interested in doing a post hoc test of this stability idea and decided that an indication of stability or change might be seen in patterns of correlations between home and laboratory scores. I hypothesized that the correlation of home and laboratory scores of the mothers, fathers, and children of the FI families should be negative or at least of lower magnitude than the correlation of the FD families. This would reflect the stability of the FD families and the change of the FI families as a function of situation. I collapsed the subgroups into FI and FD families and ran correlations for mother scores in home and laboratory on these power indices and did the same for the fathers as two groups and the children as two groups. The differences in correlations were tallied as to whether they met the criteria of negative or lower magnitude. Two-thirds or 67% of the comparisons turned out as predicted. The home vs. laboratory correlations of the FI families were either

negative or lower in magnitude than those of the FD families. This is admittedly a crude test but does support the idea of change in behavior patterns from home to laboratory settings being more evident in the families of FI children.

Some of the stability findings have touched on the notion concerning salience mentioned earlier. There does seem to be a pattern of the same sex parent in the FI families - i.e. the fathers of FI boys and the mothers of FI girls - as being the more salient figure with respect to these measures. For the FD families the pattern is in the direction of the opposite sex parent, i.e. the fathers of FD girls and the mothers of FD boys, as a more salient figure. What then are some of the findings that led to this conclusion?

FI families - Salience

The data for the FI families indicate, for example, that the mothers of FI girls at home are the family members who talk the most and who initiate and terminate the most SIU. Furthermore, even though the FI girls manifest more of these indicators of power in the laboratory - it is their mothers who interrupt the most in the family and also terminate the SIU the most in the laboratory.

The same sex parent pattern is indicated for the FI boys as well, and again particularly in the laboratory where, for example, the fathers of the FI boys talk more than the other family members as well as terminating more SIU than the other family members.

FD families - Salience

The pattern of salience for the FD families is for the opposite sex parent to be a more powerful figure in the family network. This pattern is not as strong, however, as it is for the FI families. Nevertheless, we do find that at home the mothers of the FD boys speak more than the fathers at home, which is different from

the pattern in the other subgroups of families. In the laboratory, it is these mothers of FD boys who interrupt more than the other family members. The opposite sex pattern also holds to some degree for the FD girls and their fathers as we find in the laboratory it is the fathers of the FD girls who talk and interrupt more than the other family members.

I was concerned, here again, to see if a post hoc test would support the salience notion. I thought that salience could be represented as the difference between the mother and father in each family for each index. All the scores of mothers and fathers on these measures were converted to standard scores and a difference between mother and father on each home and laboratory index was obtained. An ANOVA was run on these difference scores. These analyses were consistent with the previous findings and were most apparent in the laboratory situation (see Table 1). On these mother-father difference scores in the laboratory, there is a sex by cognitive style interaction for participation, termination of SIU, successful interruption, and for a composite total score. These findings all support the idea that for the FI groups, in particular, the same sex parent is the salient one and for the FD children the salient parent is the opposite sex parent.

Discussion

In summary, then, what seems to characterize the families with the FI child are less stringently structured family power relations which vary more in the expressions of autonomy and power from situation to situation. The laboratory situation, with its task related characteristics, seems to alter the within family power relations to a marked degree. In contrast, a more sharply defined set of family roles and more stability in this power structure seems to characterize the families with FD children. Along with the changing power structure of the FI families was

the emergence of the same sex parent as the strong, intrusive figure in the behavioral characteristics that were observed.

These findings are certainly consistent with the literature on father presence/absence and the development of cognitive style referred to earlier. The fathers of the FI boys are strong figures in the interactions. This is not to say that the fathers of FD boys are inactive but not as active relative to fathers of the FI boys. What is of note as well, is the extent to which the mother of FI girls take part in these interactions, especially in the laboratory, where these mothers and the fathers of the FI boys terminate the SIU so much more than the other family members. Although the coding of the content variables is just underway, there are some preliminary indications that these terminating statements, the last word in these interaction units, are approval statements- approval of the activities going on to complete the task. So if these mothers and these fathers are in one sense more intrusive they could in another sense, be considered more nurturant. If this preliminary finding held up, it is also consistent with the previous literature not only with respect to father and son but also mother and daughter and cognitive style.

While the parents in these samples have higher levels of power, this power does not uniformly generalize across situations. If the families had been observed only at home, one set of findings would apply; if they had been observed only in the laboratory situation another set of findings would apply. Yet stability or change in family role differed among the families.

These findings that parental/child power does not uniformly generalize across situations have led me to see the need for an interactionist perspective (Bowers, 1973; Ekehammer, 1974; Mischel, 1973; Rose, Blank and Spalter, 1975) in family studies if we are to more accurately depict not only father effects but also the impact

of other family members' behavior. By interactionist is meant that family group characteristics alone or situational characteristics alone may not be as predictive of behavior, may not account for as much of the variance as the interaction of the family group in particular situations.

We need, in other words, to pay more attention to paradigms for analyzing social systems such as the family in particular settings. The objectives are the same as "experimental designs" as psychologists know them, namely to separate the effects of various factors on dependent variables. But the problem is considerably more complicated because in analyzing such social systems as the family, the factors we are interested in are not independent of one another. In the real world of the family, several independent variables are entangled with each other and the effects of particular variables can be examined only by using statistical procedures controlling for the effects of the other variables.

I have been most impressed with the comprehensive framework for analyzing social systems presented by Riley (1963). This framework operates through a set of distinct though related partial analyses. One basic distinction are between group vs. individual levels of analyses.

Individual levels of analyses are concerned with differences between individuals without reference to group membership. In the purely individual analyses one could compare fathers with mothers regardless of family type like FI/FD and would be concerned with questions like do fathers interrupt more than mothers?

Groups (Family) levels of analyses are concerned with differences between groups without reference to the individuals composing the groups. It is concerned with properties of families that cannot be reduced to individual levels of explanation despite the fact that the original sources of data are the behavior of individuals. In this group level of analysis, family scores as a whole are computed,

as was done in the current study, and subtypes of families, are compared e.g., FD vs. FI on Intact vs. Divorced vs. Widowed vs. Separated.

There are other partial analyses of relevance for family studies. One allows for examination of families across observational settings and allows one to inquire if the amount of change is different in any family type in which one is interested. Another partial analysis allows for analysis within families and asks if there significant patterns of role differentiation (e.g. mothers > sons > fathers) in any family type in any sort of observational setting. I believe we need such analytic models to help shift our thinking from the individual or dyadic levels of analysis to family analysis beyond the dyad.

Enthusiasm for ecological approaches has grown considerably (Bronfenbrenner, 1973). But despite the apparent need for them, studies of the ecology of the family are sparse. It is not that the ecological approach lacks merit but that they are difficult to implement. As I have tried to indicate, our theoretical models and research designs may not be appropriate for the simultaneous investigation of the multiple variables and systems involved in family ecological studies. We need such models to give us a better base to make generalizations about the reciprocal effects of all family members, fathers included. This is what has been argued for in this paper.

Table 1

MOTHER-FATHER DIFFERENCES*
ON LABORATORY MEASURES OF POWER

MEAN LAB PARTICIPATION DIFFERENCES SCORE

	FI	FD
Girls	5.41	-3.62
Boys	-4.90	3.06

MEAN LAB INITIATION DIFFERENCE SCORE

	FI	FD
Girls	2.92	-1.28
Boys	-1.46	-0.49

MEAN LAB TERMINATION DIFFERENCE SCORE

	FI	FD
Girls	8.79	1.87
Boys	-13.07	3.09

MEAN LAB SUCCESSFUL INTERRUPTION DIFFERENCE SCORE

	FI	FD
Girls	1.42	-7.46
Boys	-2.37	8.53

MEAN LAB INTERRUPTION CONTRIBUTION DIFFERENCE SCORE

	FI	FD
Girls	10.56	2.44
Boys	-10.47	-2.54

MEAN TOTAL LAB DIFFERENCE SCORES

	FI	FD
Girls	45.41	-20.38
Boys	-26.70	-3.40

*Note: Minus Score = FA > MO
Plus Score = MO > FA

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Footnote

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